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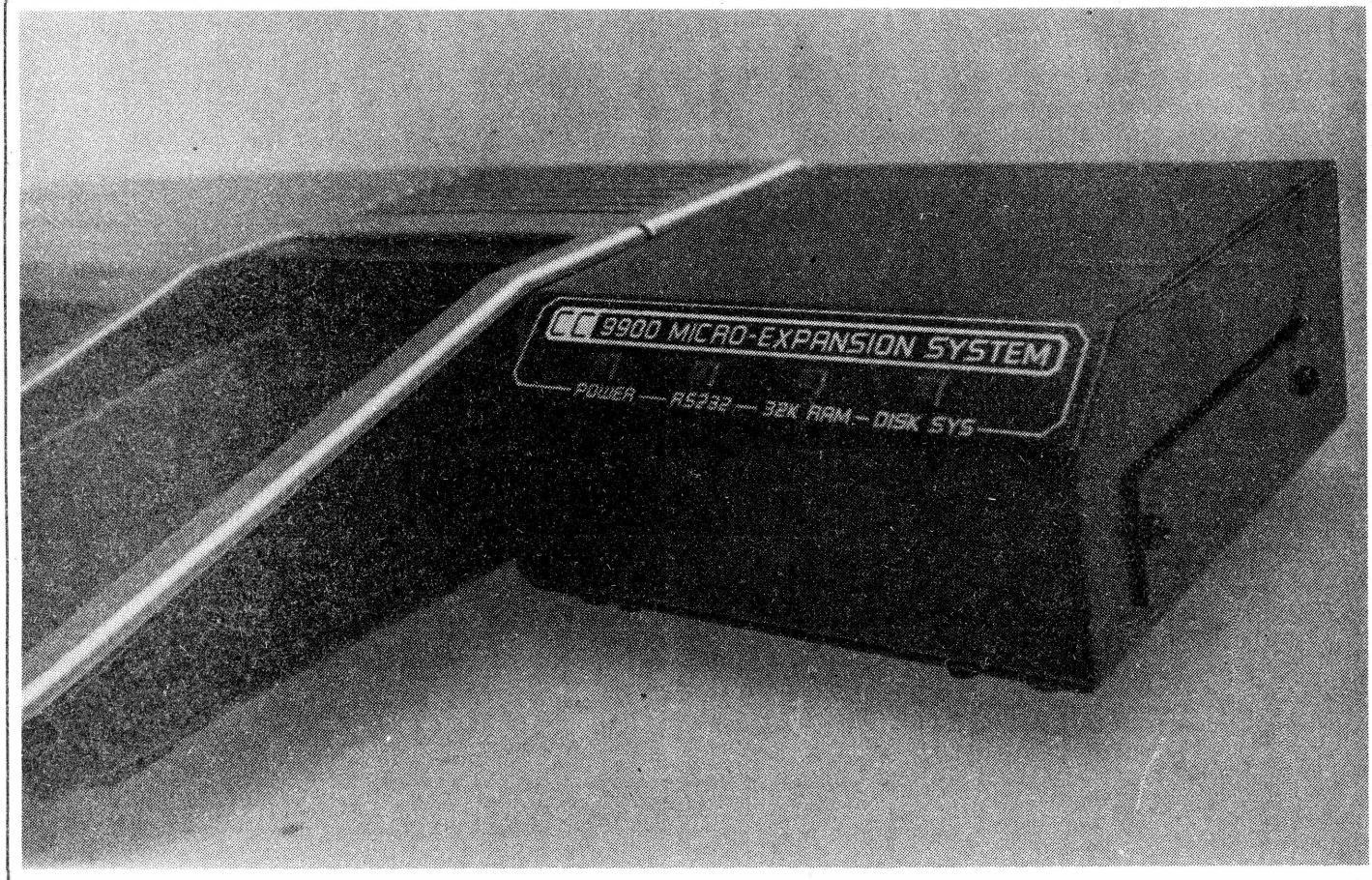
MICROpendium

Covering The TI99/4A Home Computer And Compatibles

Volume 1 Number 6 July 1984 $1.50



The little box that could

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MICROpendium

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Telephone: (512) 255-1512
Source: TI4596
John Koloen ..... Publisher
Laura Burns ..... Editor

Coming Next Month

—An interview with a very helpful guy

—Review of a 1200 baud terminal emulator program

—Copyrighting your software: how to do it.

®Copyright MICROpendium

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Listed below are the products that have been reviewed in MICROpendium and the issues in which the reviews appeared.

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Lost Treasure of the Aztec	June
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Comments

Why Keep Your TI?

What reason is there to hang onto your TI home computer? Why not buy another, more powerful, computer if you can afford it?

Well, nothing's stopping you, or me for that matter. But I haven't seen anything I like that much, within budget constraints, to make me jump ship. Sure, there are more games available for the Ataris and Commodores, but game playing is not the principal use I have for computers. Also, I like the simplicity of the TI. That comes from having used the machine for several years, I suppose, but it's something I've not felt about other machines I'm familiar with, such as the Commodore and IBM. I like the TI's funky keyboard. I find it easy to use for virtually any task, unlike the IBM-PC which is definitely not designed for word-processing. I don't like the feel of the Commodores I've used. The keys are mushy compared to the TI, and I've had more problems with keys repeating themselves on the Commodore than the TI. My first TI developed a severe "bounce" problem that eventually went terminal, pardon the pun. But TI solved that problem in later keyboards.

I will admit that I have had some desire to buy a TI-Pro, but thus far I can't find anything I could do with it that I cannot already do with my trusty 99/4A. (Yes, I know you can run Db-II and other very sophisticated programs, but who can afford to spend $400 and more per program for home use?)

From a somewhat more analytical point of view, I think that home computer users are either satisfied with the systems they initially purchased and hence are not likely to go out and buy another system, or were not initially satisfied and probably turned around and got a different system immediately. I bought my first TI when the price went down to $300, figuring it was a cheap way to learn about computers. (Apple was selling for about $2,000 at the time.) I didn't like the way the peripherals attached to the side of the computer, but otherwise was very happy with it. Then TI announced its Peripheral Expansion Box, and that was all the convincing I needed to stay with the TI.

Then, too, the home computer market, though volatile in some respects, is not like the business market where computers are bought and sold as much for what they can do as for the fact that they can be depreciated. The home computer market is like any other specialty market (cameras, stereos, etc.) in that purchasers generally find something they like and stay with it, regardless of the "new and improved" models that come out in subsequent years. I've got a Nikon F2A camera body that I bought about six years ago and I won't trade it in on any camera that's come out since. It does everything I want it to do as well as I want to do it. As the saw goes: if it ain't broke, don't fix it.

PROGRAMMERS FIGHT BACK

Last month I touched on the plight of programmers who are being victimized by software pirates. Specifically, I noted that the protection utilities of TI Extended BASIC are not longer very effective against even a moderately determined pirate. But that doesn't mean that the programmers are defenseless. Rather, they are coming up with new ways of protecting their programs that may keep them more than a step ahead of the pirates. I have heard of one programmer who has developed a routine that is supposed to erase the program if a user tries to copy it. Others are writing their programs into files, using unusual access requirements (such as lowercase disk names) to load the programs. Of course, most of these protection routines work out of the expansion memory, so you may see fewer programs written for system configurations that don't permit such protection routines. We intend to dig deeper into this in the near future.

WHAT'S IN A REVIEW?

As you probably know, I write most of the reviews that appear in MICROpendium. I doubt if you know what our policies are regarding software reviews and how we decide what to review. Aside from suggestions by readers, most reviews are based on software that is sent to us for consideration. Generally, if the program doesn't really grab me the first or second time I load it into the computer, it will probably not be reviewed. As I've learned, there's enough really good software out there to relegate the not-so-good stuff to a box that just sits on the shelf. Also, I do not believe in letting the bad drive out the good, so to speak, so you will generally read only reviews of items that I like or thought would be of benefit to other TI users. There will be exceptions to this, of course, but space is at such a premium for us that we don't want to waste it on products that are either worthless or poorly done.

Starting This Month...

A new column will appear in MICROpendium starting with this issue: a listing of items that have been reviewed and the date of the review. It is set in a smaller type size than other articles so that it will not take up much space.

At this point, back issues will continue to be supplied to subscribers who desire them simply by notifying us of which issues the subscriber wants. We will backdate the subscription to include the back issues so that subscribers will not be charged more than $1 per copy for each. We will continue to do this until we run out of back issues.

That's all for now.

—JK

Feedback

Protectionism

I am very sorry to hear that some of the third party software developers consider the TI99/4A market not worth supporting because they feel that user's groups are encouraging buying a single copy of software, then making multiple copies to hand out to other members. I can assure these developers that this is not the policy of the Central Texas Users' Group. While we are always trying to get the best price for our members on software, free is not what we had in mind.

The question of protecting software is a thorny one that software developers have been losing sleep over for years. I can't help them much with this problem except to vote no to publishing methods to unprotect programs. While I am personally intrigued by these methods (mostly because it would allow me to backup to disk some cassette software that I have acquired over the years), disclosing the information would cause more harm than good.

Why more harm than good? Because the computer is only a vehicle on which software runs. Without software, it is nothing but a large paperweight. (This is something TI did not understand until too late.) I feel that when software developers stop publishing programs for the TI99/4A, it will be time to begin looking for a new machine. Since it is the purpose of users' groups to help their members get the most out of their machine, hurting the software developers by copying their programs is counter-productive.

Mike Schultz
President
Central Texas 99/4A Users' Group

Enjoyed it

Our club has thoroughly enjoyed reading the article on the TIBBS by Laura Burns. In the past year we have seen the modem increase in numbers for the TI home computer as TI owners want to telecomunicate with other owners to exchange information, software, etc. The BBS is more cost efficient to the user due to inexpensive telephone rates and usually free access to these systems and also when compared to large database systems such as The Source where the monthly credit card bills can be several hundred dollars. Our club wants to thank Ralph Fowler for creating the TIBBS program and we hope to purchase this package in the near future, as our club's members who have modems would benefit from its existence in our city.

I wish to congratulate you on publishing such a fine magazine that is eagerly awaited each month by our club.

Winnipeg 99/4 Computer Club
Winnipeg, Manitoba

Clarification

Mark me down as interested in MMM, especially bit-map mode.

On page 22 of the March issue under "Speaking of BASIC," you explain how to list to speech synthesizer using TEII. Fascinating! However, the statement about not being able to stop the listing is untrue. Function CLEAR does indeed stop the listing to speech, but can only do so if you hold said keys down until the end of a line. It will then list the next line and stop.

Scott Oldham
Chattanooga, Tennessee

On piracy

Thank you so much for a much improved magazine. Each issue is worth the money.

Your question about "copying copyrighted programs" is very thought provoking. If you look at the free software that is floating around for the Apple, I guess it's inevitable that the same conditions would prevail with the TI or any other computer, including the IBM. Is it right? Not really, and of course it isn't legal. It may seem more prevalent with the TI software, since TI has left the market and people have been scratching for every piece of software that they can find with the fear that if they don't get it now, it won't be available.

Of course, if the copying continues those fears may become a reality.

Dave Peden
El Cajon, California

Seeks test mode

First let me say that you have a terrific magazine.... I really enjoy every department but I especially enjoy User Notes. As an intermediate TI user/programmer I find this section really interesting. I tried the test mode for Alpiner just for fun. Then with my Burgertime cartridge I tried SHIFT 8 (*) when the game title screen appeared and the following message appeared: code modifications by John M. Phillips.

This is probably the person who translated the program for the TI. I have not found a test program for Burgertime as yet.

Bryan J. Lizotte
Shelton, Connecticut

Found it here

Do you recall in TI-Writer where it says you can make a program into a text file but you CANNOT make a text file into a program? Well, I found a company that makes a product called Program Writer. This program works great. I needed something to convert downloaded text files into programs without retyping. Program Writer really fit the bill. The company's name is The Softies (7300 Gallagher, Ste. 220, Edina, MN 55435).

The program comes with a tutorial manual which really helped me get going with it.

Hallie Bremer
St. Louis Park, Minnesota

Votes 'no'

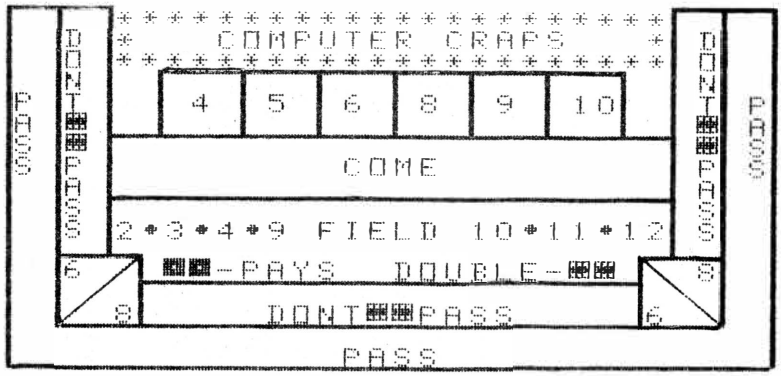
Protection: I know one way to remove the proprietary disk protect and one CALL LOAD to beat Extended

(Please turn to Page 5)

RAMSOFT SOFTWARE :

COMPUTER CRAPS :

This game simulates Las Vegas Style craps. It has complete graphics including our Ramsoft Layout (based upon the California Layout) and sprite dice. This simulation game includes the Pass Line, Place, Dont Pass bets, and has a total of seven different craps bets. For those of who do not know how to play, the rules for each bet are included in the program, and on a file that can be used with the TI-Writer formatter for a hard copy. Computer Craps requires a disk drive and controller, 48K, and extended basic. A speech synthesizer is optional. This program is available for $14.95 postpaid.



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Feedback

(Continued from Page 4)

BASIC protect and would like to see such material published. However, if I had a magazine like yours I would not publish such information, hoping to avoid losing support of advertisers and getting a reputation as a computer crook. I do not buy software very much so it is not a big subject.

Third party software: I am regularly astounded by people who write software (and books) who expect me to buy their stuff when they are turning out stuff easily duplicated by anyone who reads the TI manuals. Now that the beginners in TI are either going to quit or get better, I see the market for BASIC games drying up and the only demand continuing in programming aids and machine language. (In a year I predict most TIs still in use (not in the closet) will have 32K and disk and most buyers will expect full-service software if they buy any.)

Extra memory: CALL LOAD(-31866,33,0) seems no more real than (-31866,160). If you load a program into the expanded (32K not 24K) size and do a SIZE you find the same result as if you loaded the program without the CALL LOAD. I think you are right in giving interesting CALL LOADs but suggest testing or disclaimers be run with each one, like you did on 64K, up front.

Tunnels of Doom trick seems to work on Savage Island, Voodoo Castle and Mission Impossible. What didn't work?

First class (mailing) is needed for magazines selling time-dated or flea-market stuff, but your ads are mostly dealers so I can't see why it would be worth doing. I agree, you shouldn't hold up publication unless certain of something really big (and really certain).

My big point: I will probably continue supporting all TI magazines as long as I continue to be active in TI. However, I am getting upset at the personalities running certain publications.... Children: I believe there is a certain amount of hard core TI support out there and unless you turn us off with your petty bickering we will support you all. I have never seen any attacks on others in the field in MICROpendium and hope you will keep it that way.

—Douglas Smith
Waldorf, Maryland

The Feedback column is for readers. It is a forum to communicate with other readers. The editor will condense excessively lengthy submissions where necessary. Contributors should restrict themselves to one subject for the sake of simplicity. Mail Feedback to: MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

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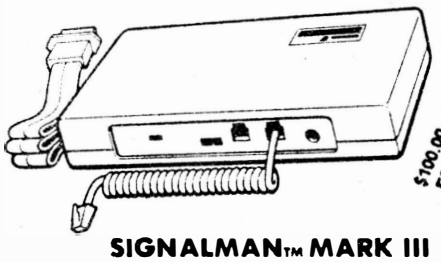

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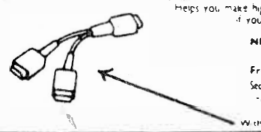

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Sound is key quality

A speech synthesizer is a nice thing to have, if you are a TI user.

If you are a TI user who is also blind, it is a particularly important piece of equipment.

Dana Walker of Montgomery, Alabama, began using the TI99/4A when her husband, Dr. David Walker, "decided a computer was what we absolutely needed."

In an article she wrote for the TIBUG (Birmingham Users Group) newsletter last year, she describes how she began.

"The first thing I did, after setting up the computer, was to label a few keys in braille, to help me get oriented to the keyboard. A friend had already had the reference manual and the TI BASIC book read onto tape, so I got a copy and began studying.

"The first big problem was that the computer is rather uncommunicative about errors. It would just beep and sit silent and uncooperative until my husband came in to read the error message to me."

Her husband began working on a program to read error statements, then she heard about one created by another blind user.

An Ohio-based user group for the blind has yet another one, she found.

When she contacted the Ohio group, she got Hangman from them, in a version which combines speech and graphics, so that "the sighted can play with me or I can play by myself."

When Walker wrote her article, she said that she used the TI Terminal Emulator cartridge and the speech synthesizer.

"The only drawback to the 99/4A is that with the Terminal Emulator in use, you can't use any of the other program modules," she wrote. "This means that you can't use the memory expansion card. Being able to run two modules at the same time would expand the possible uses of the TI99/4A for the blind programmer. TI says, by the way, that in about a year they're coming out with the speech on a disk. This will be a great advantage."

'The first big problem was that the computer is rather uncommunicative about errors. It would just beep and sit silent and uncooperative until my husband came in to read the error message to me.'

—Dana Walker

However, she notes that the disk-based speech program did not live up to her expectations.

"It runs in Extended BASIC," she says. "You're still limited to using only one module. It's not as convenient to use as the Terminal Emulator."

A friend has worked on a program to make an impact printer produce braille hard copy. However, Walker notes, his program uses only grade 1 braille, which writes English letter by letter. Grade 2 braille, which is used by more blind persons, uses contractions—the letters "tgr" to represent the word "together," for instance, or a single symbol for the word "the." Bob Justice, of the Ohio blind user group is working on a search routine to enable the writing of grade 2 braille, Walker notes.

She says her favorite programs are games. Besides Hangman, she plays blackjack and craps and some games that are "musical in nature." She notes that most of the games are "just games people have gotten from each other or gotten out of books," modified for use with the speech synthesizer.

Her husband, who teaches logic at Auburn University in Montgomery, uses the TI99/4A to compute grades. She teaches English at the same university but doesn't have a grading program for her classes.

"I wanted mine to be a little different from his," she says. "I haven't gotten around to modifying his yet."

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User group helps blind

By LAURA BURNS

Because his sight was fading away with retinitis pigmentosa, Bob Justice knew he would have to quit working some day.

He worked as a pin-spotter mechanic in a bowling alley, and later as a leathergoods designer and production supervisor.

Wanting to retrain, he wondered whether he could become a computer programmer.

"The TI home computer came way down in price, and with synthesized speech, it seemed like a good way to find out whether or not computing would be the way to go," he says.

His brother, Michael, also had a TI. They found that there was not a lot of information available on using speech.

"We thought that there are other persons like us and decided it may be a good idea to get a group going," he says.

The Ohio-based TI group for blind users is small.

"The disappointing part is, counting my brothers and I, there are less than a dozen people," Justice says. "But we think people we are in contact with are in contact with others."

There is no membership fee for the group, he says.

"We help people in any way we can," he says. "What we know about computers is self-taught. If anything we know would help someone, we contribute. We are also glad to receive any type of information."

Justice, who is legally blind but not totally blind, says persons interested in the group can correspond with him by cassette or in print, which he can read by magnifying it, at 3461 S. Buena Vista, South Charleston, OH45368.

The group is based "almost totally" on TI, he says.

"We're familiar with some other things," he says. "More expensive computers have things, but they are financially out of reach for most blind people."

'More expensive computers have things, but they are financially out of reach for most blind people.'
—Bob Justice

He notes that "commercially for Texas Instruments computers there are no programs for the blind."

The group, he says, has a few games members developed themselves and adaptations of other games.

For example, a game called Enemy Chase is "a matter of trying to match tones" by raising or lowering the tone. If you match the tone, "you've shot down the enemy. It's like lining up sights on a screen."

Justice also mentions a file box program and a check register program which is being developed.

A blind user can keep talking book lists on the computer, coding so that the program has titles listed as to topic, he comments.

Some programs include some screen display for uses with some residual vision, Justice says, noting that he can see white characters on a black background on a large screen.

"We don't have a large library, and they're not always our own original idea," he says of the group's program collection. "Hangman was copied out of a book and it was totally graphics. I rewrote what I had to to make it available to blind people."

He notes that a "major frustration with the Texas Instruments computer, since it is not designed for the blind or visually impaired, it's not totally user-friendly for the blind."

The black on light blue screen color, which shows black on gray on a black-and-white screen, is difficult for a visually impaired person to see, he notes. To overcome this, a person can program the computer to show white letters on a black blackground using Extended BASIC.

Another problem is "you can't get the program to talk when you're in the 'write' mode," he says. "You have to write in the program and then have a way of checking. If you're not too good of a typist and type in an S instead of an A, sometimes the error is hard to find."

Justice says "we had to develop an error program" but notes, "we're not the only ones. Other people have developed a screen reading program."

The 41-year-old father of three says he is currently writing programs for other persons to gain experience. He has written a time summary analysis program for a city and is writing a mailing list program for the Newsreel Club, a cassette-magazine club for blind persons. For a merchandiser, he is writing a mailing list program which is connected to a database inventory program. When it prints out the invoice, it will subtract the merchandise sold from the inventory. These programs are being done on a voluntary basis, Justice says, because "I'm still learning."

He notes, "I will gain experience. After I've done programs for several people I will have established a portfolio."

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Programmer has tips for all

Jim Foust of Decatur, Georgia, has done programs on the TI99/4A that "TI says can't be done in BASIC. Some of them they say can't be done at all."

The blind user began using a TI home computer when "I bought one and the speech synthesizer. My son read the books. It seems like programming sort of became natural. The machine is pretty logical."

He says, "People are under a misconception about BASIC. BASIC is a very sophisticated and high-powered language. The only disadvantage is that it is slower. It will do anything the rest of them do and a lot they can't."

He says he learned programming from two books, one of which, the owner's manual, "ranges from poor to worthless."

But the book that teaches BASIC that comes with the computer, he says, "is one of the finest."

'BASIC is a very sophisticated and high-powered language. The only disadvantage is that it is slower. It will do anything the rest of them do and a lot they can't.'

—Jim Foust

Foust says he was even interested in the section in the BASIC book which "spends a lot of time on graphics and color. Normally that's as boring for blind people as anything could be."

However, he sees the section as helpful, not only in communicating with the sighted world and overcoming the gap between the blind and sighted world, but "there's a lot of programming hints you use for other things than color and graphics."

He says he has programmed a few games and filing, inventory, name and address listers and budget programs.

"I strongly recommend that a person not get everything in one program," he says. "You can't do it. It would take a Philadelphia lawyer and two accountants to figure it out.

(Please turn to Page 12)

USING THE RADIO—

(Continued from Page 11)

Instead, you should have little bitty programs and the same data base. This allows you to load it faster, it will run faster and you don't run out of memory."

Long programs are a disadvantage because "the more you've got in there the more often the computer has to stop what it's doing to purge its memory."

Foust uses an FM radio to detect the radio frequency output of the computer. Using the radio, he can tell when the computer begins purging.

"Using the radio is a beautiful thing for blind people and it wouldn't hurt the sighted," he says. "You take an FM radio and tune it to what you might call garbage. When you hear a little blip, blip, blip, blip, blip, that's the cursor blinking."

Using the radio, he can tell when the computer runs into the next program loop—"it makes a little fluttering sound"—or when it has quit.

He has little use for TI's speech utilities using the Extended BASIC cartridge.

"You'll probably never in your whole life run into a tackier piece of software," he says.

He recommends, instead, the Echo GP (General Purpose) Speech Synthesizer from Street Electronics in California, which he says will operate off any RS232C port on any computer.

One advantage, he notes, is "when you go to Cousin Bob's, you can use it with his IBM."

Foust says he is in contact with several blind users throughout the country and does a lot of programming for both blind and sighted persons. He says he programs "semiprofessionally" in that he does customized software. Currently, he says, he is creating a program on a TRS80 for the Coats and Clark Company, a firm noted for manufacturing thread, zippers and other sewing aids.

He has high praise for TI's BASIC.

"I firmly believe TI BASIC is far, far superior to any BASIC I ever ran into," he says. "I wish you could get the TI language into some of these other computers."

Foust is a member of the Atlanta TI Users Group and is interested in helping other blind users.

"There's no sense in everybody digging the same hole," he notes.

One person he has helped was a blind police dispatcher in Birmingham, Alabama. The police department was "about to let him go" when they converted to computer dispatching.

Foust suggested a TI99/4A with a Terminal Emulator II and RS232 interface to "patch him into" the mainframe computer, which happened to be manufactured by Texas Instruments.

"Now he can do as well as any sighted dispatcher, except faster," Foust says.

By following 400 rules, Echo GP talks to you

The Echo GP (General Purpose) Speech Synthesizer, with a cable which attaches to an RS232 port, sells for $249.95.

"Unfortunately, we had to raise the price, so it's $50 more than it was a month ago," Andy Clare, sales manager for Street Electronics, which produces the Echo GP, says.

He notes that there is a 10 percent discount on the Echo for the disabled. However, he says, "within the next couple of months," the company will be marketing it through dealers and not engaging in direct sales.

The Echo GP is a hardware device which "hooks up just like a printer," he says. The speech is phonetically based, with approximately 400 rules built into the system.

"You type in the words and if, for instance, you have a K followed by an N, like in 'knee' or 'knight' the K will be silent," he says. "Of course, these are English rules. It doesn't do a real good job with foreign languages. If you type in French, for instance, it doesn't sound especially good. It sounds like freshman French."

He notes that the Echo GP can be used on mainframe computers. Clare says that a version of the Echo produced for the Apple II, which is less expensive and comes with a diskette, is the company's most popular model for blind computer users.

For further information, write Street Electronics, 1140 Mark Ave., Carpinteria, CA 93103 or call (805) 684-4593.

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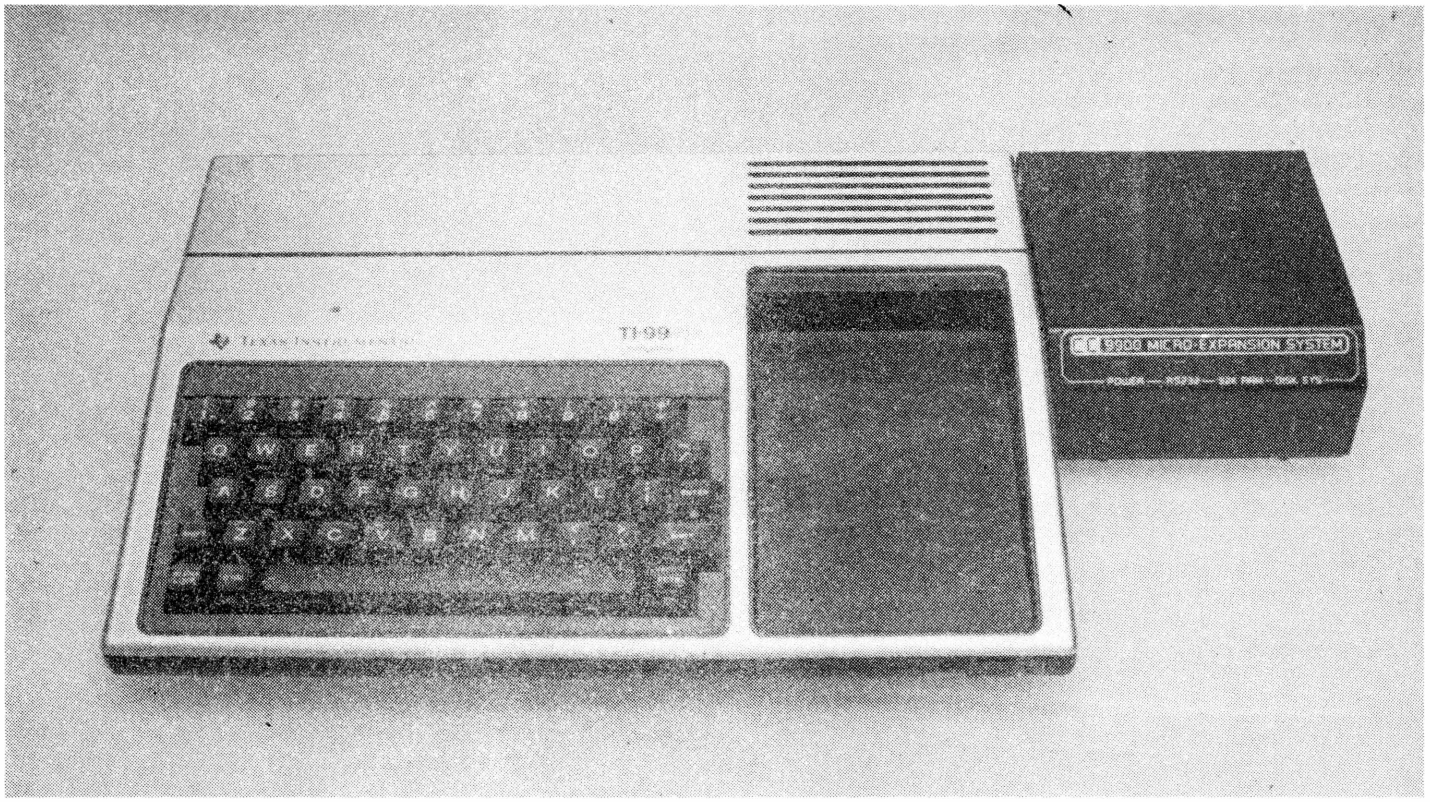


A new peripheral box for the TI

CorComp Inc. peripheral products for the TI home computer are beginning to reach the market and the likelihood is that more will be coming.

The company's 9900 Micro-Expansion System is now available, configured as an RS232 stand-alone unit. The unit can be expanded to contain a 32K memory card and a disk drive controller card. The memory card and controller are expected to be available at the end of June.

The disk controller card will format double-sided, double-density disks. TI's disk manager card is capable of formatting both sides of a disk, but is designed only for single density formatting. The CorComp disk controller comes with disk-based disk manager software.

The CorComp box attaches directly to the side of the TI99/4A. Or it may be plugged into the side of the TI Speech Synthesizer. The metal box is about twice the size of the synthesizer and is black in color. Four indicator lights on the front let the user know that the power is on and which of the three peripheral cards it contains is operating. The box comes with a transformer similar to the transformer that came with the TI computer. It is attached to the CorComp box via a six-foot, five-pin cable. The box does not have a power switch.

The back of the box includes ports for one RS232 connection, one parallel connection and a disk drive cable.

Although MICROpendium will review the product when the disk drive controller and 32K memory card are available, we found the RS232 card to work identically to the TI RS232 peripheral. Data transmission via The Source telecommunications network was flawless, using Terminal Emulator II. Dumping of data to a printer using the parallel port was routine. Accessing the printer using BASIC and through programs designed to operate out of Extended BASIC was also routine. The box is about the same size as an expansion box being marketed by Myarc Inc. of Basking Ridge, New Jersey.

The CorComp expansion box is priced at $149. An upgrade kit to add a disk controller and memory expansion to the box is priced at about $290. A fully-configured unit with disk controller, expansion memory and RS232 is priced at $399. A second RS232 port may be added for about $15.

The company also is marketing an RS232 card, disk controller card and expansion RAM compatible with the TI Peripheral Expansion Box. The RS232 card has two serial ports and one parallel port. Prices range from $199 for the disk controller (which is identical in operation to the controller already mentioned) to $117 for the RS232 and $136 for the 32K RAM card. The disk controller comes with a disk-based disk manager.

The CorComp disk manager operates out of BASIC or Extended BASIC and requires a 32K memory expansion.

The disk controller card and disk manager program comes with many features not found in the TI controller and disk manager cartridge. In addition to formatting double-sided, double-density disks, the card is capable of controlling up to four disk drives. The TI drives can control three drives. About 360 kilobytes of data may be stored on a double—sided, double—density disk, compared to

(Please turn to Page 14)

CORCOMP—

(Continued from Page 13)

about 180 kilobytes on a double—sided, single-density disk.

Also, according to the company, the controller will load files about 2-4 times faster than the TI controller.

The CorComp controller also provides the following capabilities not available with the TI controller:

—CALL POKE and CALL PEEK for rapid reading and writing to CPU memory.

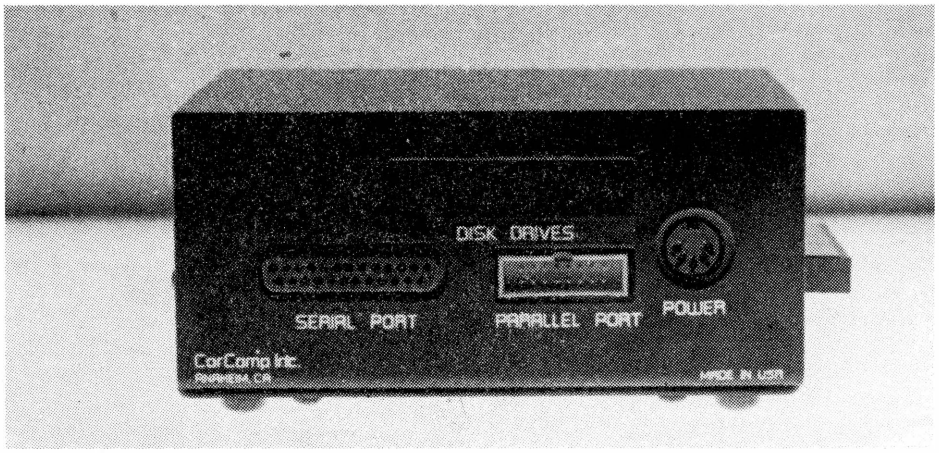
—CALL POKEV and CALL PEEKV for rapid reading and writing to VDP RAM.

—CALL MOVEM for moving blocks of memory from VDP RAM to VDP RAM or CPU memory to VDP RAM or VDP RAM to CPU RAM or CPU memory to CPU RAM. CorComp says this CALL can move 30-40 screens of data per second.

—CALL EXEC for executing ROM or expansion memory routines.

—CALL MGR for loading and running the CC-Disk Manager program.

The disk manager also offers the user the option to configure the system to his needs. Users may select text and screen colors, set up each drive for number of sides, density and number of tracks, and the printer type can be configured for catalog and disk test printouts. The configuration is saved to the disk manager diskette as system defaults.



According to Jackirae Sagouspe, CorComp marketing director, "We have a network of 1000 dealers now selling CorComp products in the U.S. We are establishing an exporting program that will service Canada, the United Kingdom and other countries."

Sagouspe notes that anyone who cannot locate CorComp products may contact the company for the location of vendors. The phone number is (714) 630-2903.

On the horizon for the company is the introduction of the CC-99000 Expansion System. This is a box that measures 4 inches x 12.5 inches wide x 12 inches deep. This system, which includes an array of disk drive and system status indicators as well as a flexible cable connection to the keyboard, optional RAM disk and four optional auxiliary motherboard locations, is expected to be released in the fourth quarter of this year.

This system provides room for two half-height disk drives, and has an echo switch that will allow modem users to echo modem input directly to a printer.

Notes on up/downloading on CompuServe

In response to a reader's question regarding uploading and downloading on CompuServe, Robert Hubbard of Union City, New Jersey, provides the following information. It has been condensed.

First, to use CompuServe, you must have a Terminal Emulator II, disk drive and controller, RS232 card and a 300 baud modem.

To see what is available for downloading, type PRO at any menu screen after leaving SIG. Following an OK prompt, type R ACCESS. This takes you into the Access database. Then use the command: BRO /KEY=99 to see what entries are available.

To download, you must copy the file into your filespace. Type COPY followed by the filename and Access will copy the file into your filespace with the name it was stored under in Access. Then EXIT Access.

After getting another OK prompt, enter R USR: TE2TRN. This activates the TI-CompuServe file transfer utility. You will then be asked whether you want to download to your TI or upload to CompuServe. Type D to download. You will be asked to enter the file name that you want to download. Then you will be notified that a file transfer has been requested and TEII will request the disk drive number you wish to download to as well as the name you would like to give the file. Do not use periods in the file name or you will not be able to load it out of your disk drive. Block counts, record counts and error counts will be displayed on the screen during transfer. You will be notified when the transfer is finished.

Uploading starts by selecting the upload option at TE2TRN. You will be asked to give a file name for the data you wish to transfer to your CompuServe workspace. Periods are permitted in this name. You will then be instructed to press CONTROL 4, which takes you to the TEII file screen. Key in the drive number and file name and the transfer will proceed. After completion, you can then SUBmit the file to Access so others may download it. Enter R ACCESS at the OK prompt and key in SUB followed by the filename. You will be asked for a key word and description. Use TI 99/4A as at least one of the key words. Once copied into Access, other users will be able to download the file.

A few warnings: Files uploaded by TE2TRN cannot be read by normal means, since they are stored in 9-bit ASCII. TE2TRN is an unsupported program so CompuServe cannot be held responsible for it. Do not SUBmit files uploaded by TE2TRN into SIG Access as there is no way to download directly from the Access system for the TI.

For more information, contact the TI SIG coordinators via the MI or B commands. (SIG stands for special interest group.)

Theon Raiders

Fast moving, fascinating

Theon Raiders went on the market in 1983. Except through mail-order it has not been readily available. And that's too bad, because I found this game to be more absorbing than any of the TI cartridge-based space games, including Parsec. If I had to choose between having Theon Raiders or Star Trek by Sega Enterprises Inc. in my software collection, I'd have a tough time making the decision.

This game comes in versions for the Editor/Assembler cartridge and the Mini-Memory cartridge. This review is based entirely on the Editor/Assembler version.

Performance: Theon Raiders is designed for joystick jockeys. This is a shoot-'em-up, no two ways about it. Sure, you've got to navigate your vessel, decide on the velocity and every once in a while go into warp drive and hyperspace, but when all is said and done your job is to shoot down the menacing hordes of aliens who are intent on destroying your space station.

After loading the game a brief title sequence is displayed. The screen consists of a view of space from the bridge of your star ship and a small blocked off area at the top left of the screen that serves as your radar. In the center of the radar scanner is a circular space station. Your ship is inside the space station when the action gets under way. Surrounding you are several enemy cruisers.

On the right top portion of the screen are four numeric readouts. The first one reports your compass bearing, the second your power supply and the third your velocity. The fourth one works only in the Editor/Assembler version and only at difficulty level three. It reports on the amount of damage your photon torpedoes have suffered from direct hits. There are seven torpedo banks and each direct hit knocks out one of them. They can be restored by reducing velocity.

After choosing the difficulty level, 1-3, the game gets under way. (Difficulty level one should be accessible to most players. Level three is very tough.)

Review

Report Card

Performance:	**A**
Ease of Use:	**A**
Documentation:	**B**
Value:	**A**
Final Grade:	**A**

Cost: $24.95 (diskette)

Manufacturer: Intersoft, 5407 Salem Hill, Austin, TX 78745, (512)447-1757

Requirements: console, monitor or television, joysticks, Editor/Assembler cartridge, disk drive and controller, 32K memory expansion. (Theon Raiders is also available in a Mini-Memory cartridge version. It comes on cassette or diskette. Neither Mini-Memory version requires the 32K memory expansion.)

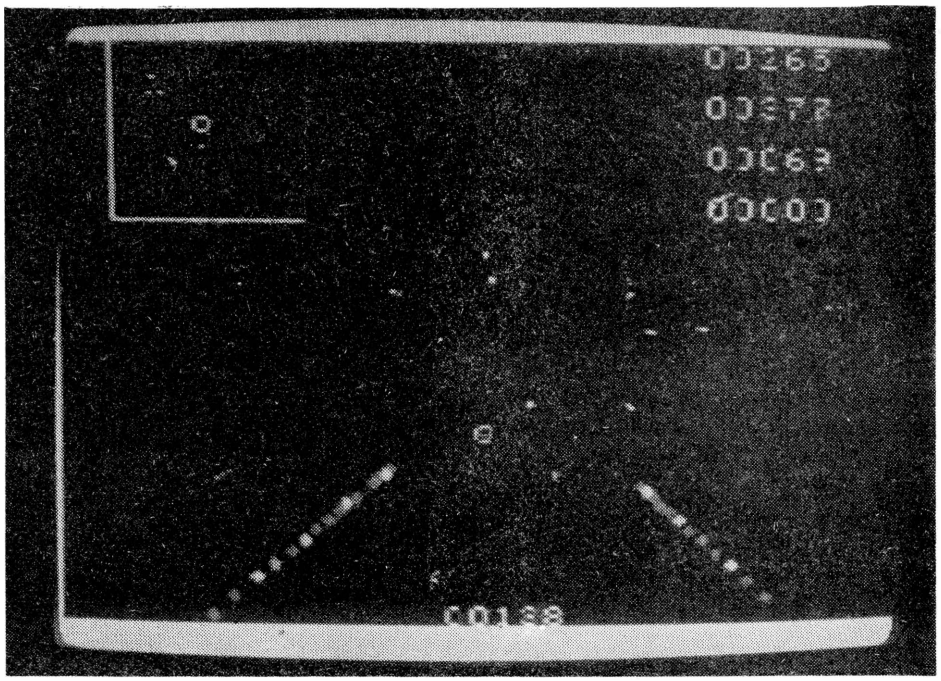
To leave the space station you must accelerate the star ship. Pressing the number 9 key increases velocity while pressing the 0 key reduces it. Reaching a velocity beyond 100 automatically puts you into warp drive. At warp speeds you can outrun the Theon battle cruisers as well as their torpedoes.

Direction is controlled by using the joystick. Moving it to the left causes the compass bearing to decrease while moving it to the right causes it to increase.

After leaving the space station, you must attack the enemy cruisers before they are able to reach the station. You set your compass bearing and then adust your speed. As you approach a Theon cruiser you see orange blips approaching you. These are its torpedoes and the nearer they get the larger they become. You must destroy them with your torpedoes to avoid being hit by them, or you can dodge them. Eventually you may reach the cruiser itself, a white blip. You destroy it in the same way as you destroy the Theon torpedoes. The Theon cruisers will crash into your ship if you fail to destroy them, thus ending the game.

Generally, you fire your torpedoes in bursts, and direct them into the targets using the joysticks. Once you've locked onto a Theon the action is furious. Your wrist will get cramps trying to fend off the oncoming torpedoes and Theons.

(Please turn to Page 19)



Assembly Language for the TI Home Computer

Everything you need to know

By CHRISTOPHER BOBBITT

It seems that forever there has been a serious lack of quality instructional and "readable" material on TI99/4A assembly language. Many of us who have combed the local bookstores, through the hoard of books on 6502 and Z80 assembly language, have ended up resigning ourselves to never knowing assembly language. Even more frustrating was the fact that the manuals that came with the cartridges that allow assembly were always obscure, and were about as much fun to read as a dictionary.

To be fair, the manuals that TI provided were only meant to teach about how to use the assembly language available on our machine, known as 9900 assembly language. They were never meant as works to teach how to program in TMS 9900 assembly language. Once one learns assembly language he will find that these manuals are exceedingly rich reference works that provide magnificent amounts of information on assembly language, and are invaluable tools. However, the question remains: how does one learn 9900 assembly language? The answer, get a book.

Until recently this was impossible. This is, until Steve Davis Publishing (Yes, the same Steve Davis who wrote Programs for the TI Home Computer), published a book called Introduction to Assembly Language for the TI Home Computer, by Ralph Molesworth. This book is THE introduction, the one that TI never bothered to write, to 9900 assembly language. Like the program book by Steve Davis Publishing, this one is a quality product, full of programs, facts and useful information.

Performance: The quality of the book itself is very high. The book begins with the basics, starting with how to use the screen editor in the Editor/Assembler cartridge, and the line-by-line assembler with the Mini-Memory cartridge. It continues upwards in difficulty to handling disk files in assembly and mixing assembly with BASIC. Along the way, various aspects of assembly language are covered. There are chapters on how to perform binary and hexadecimal arithmetic, what an address and a register are, how to code an assembly program, how to assemble it after it is coded and how to display text and graphics as well as define graphics characters and their colors, and there is a most interesting chapter explaining how assembly may be used to imitate the INPUT X$ statement in BASIC. For the number-cruncher, there is even a chapter on assembly language sorting and array handling programs.

Review

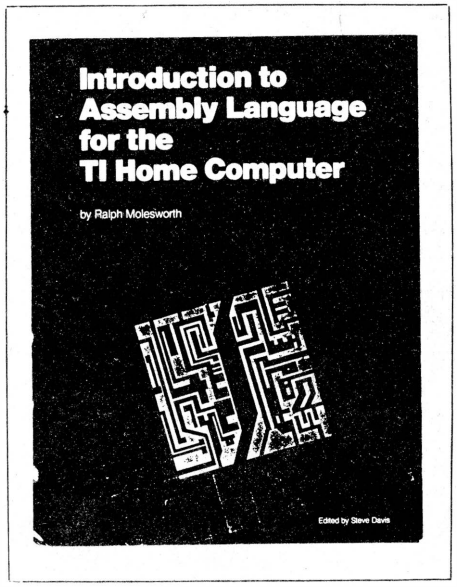
Report Card

Performance: ..... **A**
Ease of Use: ..... **A**
Documentation: ..... **A**
Value: ..... **A**
Final Grade: ..... **A**

Cost: $16.95

Publisher: Steve Davis Publishing, P.O. Box 190831, Dallas, TX 75219

Requirements: Console, monitor or television, Mini-Memory cartridge and cassette recorder or Editor/Assembler cartridge and disk drive system and 32K expansion memory.



Throughout the book there is an emphasis on explanation. All explanations are easy to follow, contain vital information on the subject and are even illustrated with examples. Every program given in the book is explained line by line, routine by routine. Every variable, every register and every simple instruction is explained in depth. Routines that perform useful functions are highlighted and explained separately. The book even gives text references to the Editor/Assembler manual by section and page for more in-depth information. This alone helps the user to sort out the amount of information presented in that manual. At the end of each chapter the vocabulary presented in the preceding pages is reviewed, and summaries of the information presented on important techniques are given in special cases.

The programs presented are well edited and free from errors; all may be typed in directly out of the book with no difficulty. Most of the programs are even useful, besides their educational properties, and will be used by the programmer as parts of larger programs for years to come. A few, such as the keyboard input program, the sorting program, the Mini-Memory "DISPLAY AT" routine and the lower-case redefinition program, are especially useful.

Ease of Use: The book is generally easy to read. All important information is presented using only the vocabulary introduced in previous chapters. The author immediately assumes that you know little or nothing about assembly. However, he also assumes that the reader is learning the vocabulary along the way, and the book uses it. All the text and programs in the book are in large letters, and the zeros and O's are easily distinguishable. The chapters are even numbered by whole numbers, not by obscure decimal section numbers. Last of all, the book doesn't constantly stress that planning is 100 percent essential to assembly

(Please turn to Page 19)

The Game of Wit

Words for the wise

If you like to play Scrabble, you will probably enjoy The Game of Wit. Similar to the popular board game, The Game of Wit may be played by one to four players. Though the rules are similar to those of Scrabble, there are more letters in the letter pool and the point system is a bit different.

Performance: The Game of Wit is played on a "board" that includes 256 squares divided into 16 rows and 16 columns. Some of the squares are colored, indicating bonus values. A green square, for example, makes the letter that is placed on it worth triple its normal value. Blue squares increase the value of the letter by a factor of five.

Scoring is similar to Scrabble. The most common letters, such as vowels, are worth one point while the less common letters are worth more. Words are formed in the same way as on a Scrabble board or crossword puzzle. As in Scrabble, foreign words and proper nouns are prohibited. (There is nothing to stop you from adopting your own rules, however.)

The game starts with the game board being drawn on the screen. Then a musical fanfare is played, which is also played at the end of the game. The program then asks for the number of players. The lower portion of the screen is used to display the score and for inputting words. Each player's letters are shown in a box at the upper right of the screen when it is his turn to play. Players have the option of passing or playing. Also shown at right is a list of letters and their values.

Unlike Scrabble, in which a player may review his letter at all times, in The Game of Wit a player sees his letters only when it his turn, which leaves little time to build a strategy. This is not a big problem because you don't know what letters will replace those you used until it is your turn to move again. As the title implies, you have to have your wits about you to play well.

Once a player presses the enter key, signifying his intention to play, he has about three and one-half minutes to enter his word or lose his turn. After entering the word, the player is asked for row and column number coordinates and whether the word is down or across. Then the computer asks whether any of the other players would like to challenge the word. If not, it is entered on the screen and the points added to the player's total.

If a player uses a letter that he doesn't have, the computer lets him know of his error and reports that he has lost his turn.

There are 115 letters in the letter pool, somewhat more than in the Scrabble letter pool.

Review

Report Card

Performance: ..... **A**
Ease of Use: ..... **A**
Documentation: ..... **B+**
Value: ..... **A**
Final Grade: ..... **A**

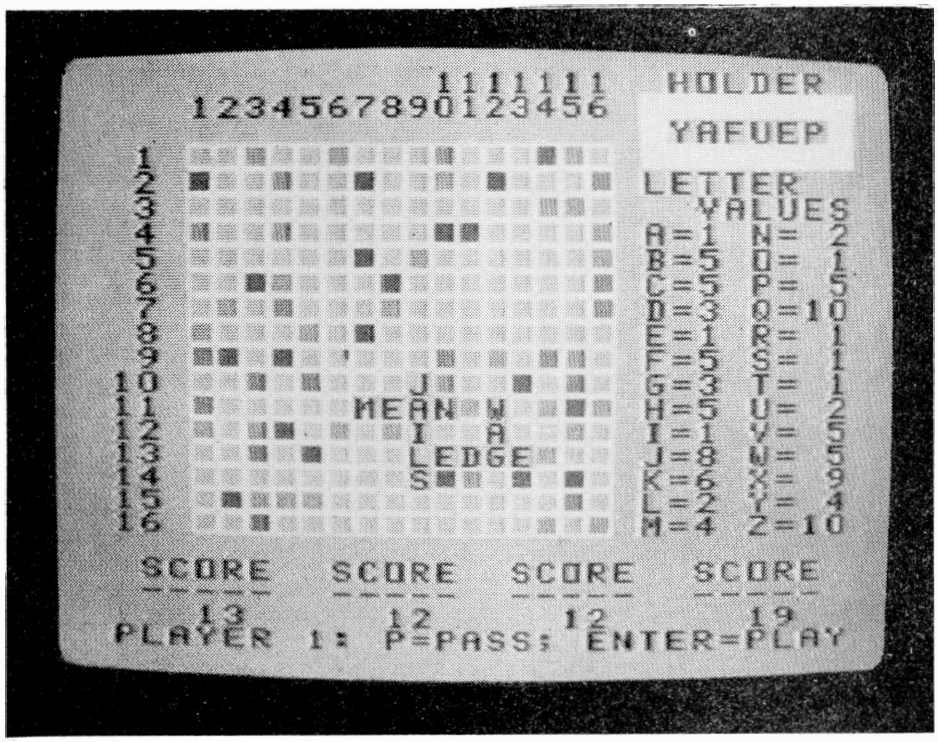
Cost: $16.95 (cassette)
Manufacturer: TEXware Associates, 350 First North St., Wellington, IL 60973, (217)352-8594
Requirements: console, monitor or television, cassette recorder, Extended BASIC cartridge, dictionary is optional

Ease of Use: Four people, varying in age from eight to 42, tested this game. Most have little expertise with programming, but none had any trouble learning how to use this program. All were familiar with Scrabble to some extent, so the rules of play were obvious. Viewing the game board on a 10-inch screen was a bit difficult, but if someone made an untoward mistake it was easy enough to "pass" our way back to give him another chance without otherwise affecting the score or the outcome of the game.

Documentation: The game comes with a well-designed, 12-page manual that assumes users have never played Scrabble or other word games.

Value: If you like word games as I do, you will want to have The Game of Wit. This game is well done.

—JK



Pole Position

It's a race against the clock

One popular myth about the TI home computer user is that he is software-starved. That is to say, he does not have access to the many popular titles that are available to users of other popular home computers.

In one sense, this has been true. Until recently TI users have not been able to purchase software by the "major" distributors. While this remains true in many cases (very little non-game software is being translated for the TI), Atari Inc., Infocom and others have been translating their games for the TI. The question now for the TI user is whether access to these other programs is an advantage.

The answer depends on your taste in software. I looked forward to getting a copy of Pole Position, but having gotten it and having played it I'm just not sure that it was worth waiting for. Don't get me wrong: the graphics are well done, the sound effects are realistic and the action is fast and furious. It's just that when I finished playing it I didn't have any great urge to play it again. (This may be based on age, since a 13-year-old who tried it out thinks the game is exciting.)

Performance: Pole position is a one player auto race game in which the drive must first qualify for a race in time trials and then race in a field of eight cars against the clock. The player's view is from behind his car and slightly above the road.

Prior to starting the time trial, the player selects the level of play (Novice, Experienced, Advanced) and the number of laps in the race (1-8). The player is then presented with a screen depicting a two-lane road. After a brief sequence in which a banner traverses the screen indicating that the time trial is about to begin. The player's race car appears on the track and readouts indicating speed, elapsed time, points, gear, high score and current score appear at the top of the screen. The qualifying lap then begins, with the player able to use either the keyboard or the joystick to control his car.

After the qualifying lap is finished, assuming you completed it in good time, the elapsed time and position at the start of the race are displayed. The faster you completed the qualifying lap, of course, the higher up in the pack you start. Bonus points are also awarded on the basis of the time trial. Winning the pole position, for example, is worth 4,000 points. The actual starting position doesn't make much difference, however, since you can easily pass all of the cars before reaching the first curve. Also, there is an indeterminate number of cars already on the road that you will have to steer around as the race progresses. The more laps you complete, the more cars will be on the road. Although I was able to complete a four-lap race at the novice and experienced levels, my best run at the advanced level was to complete one lap and part of a second.

The principal difference between the novice and high levels seemed to be in the number of cars on the road. The higher the level, the more cars. There may have been other differences, but I didn't notice them.

Velocity is controlled in two ways. You start out in low gear and must then shift into high gear to reach the higher speeds. (The fire button on the joystick acts as your gear shift. The "Y" key will also do the trick.) You may slow down by downshifting or by decelerating by pulling back on the joystick or pressing the down arrow key. The car is accelerated by pushing the joystick forward or by pressing the up arrow key. Steering is done by moving the joystick left or right or pressing the left or right arrow keys.

Scoring is based on the number of cars you pass as well as how quickly you complete laps. You have a certain amount of time to finish each lap. If you run out of time, your car comes to a stop and the race ends. Crashes, either with other cars or with roadside

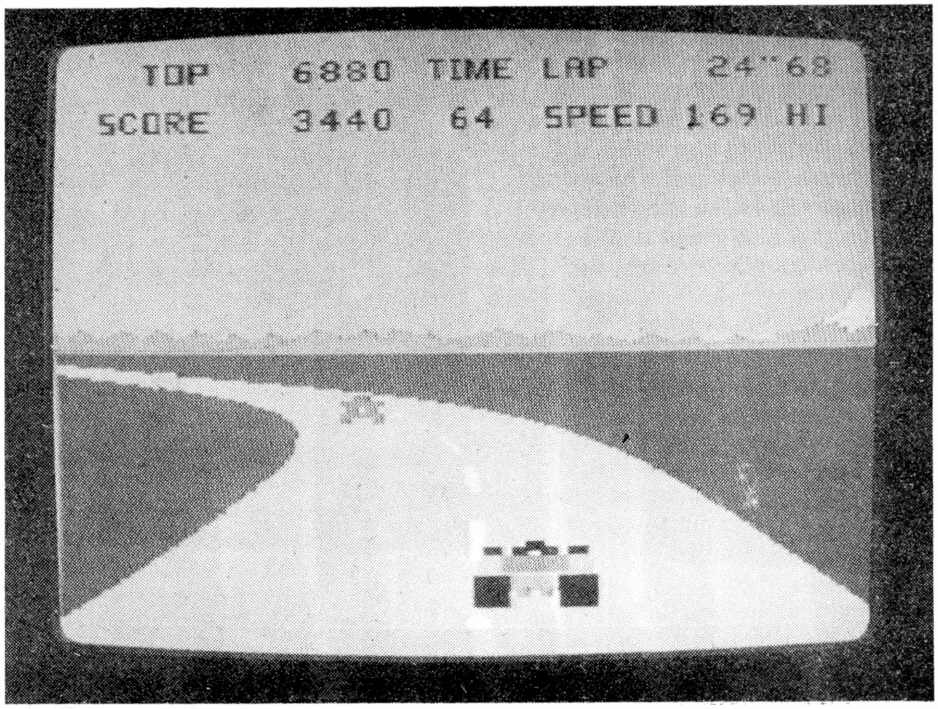
(Please turn to Page 19)

Review

Report Card

Performance:	**A**
Ease of Use:	**A**
Documentation:	**B**
Value:	**B**
Final Grade:	**B**

Cost: $29.95 (cartridge)
Manufacturer: Atari Inc., 1312 Crossman, Sunnyvale, CA 94086
Requirements: console, monitor or television, (joystick optional)



THEON—

(Continued from Page 15)

After destroying a Theon you must change your bearings again and go after the next one until you've rid the sector of all Theons. Then you go into hyperspace and emerge into another sector, complete with a space station and more Theons. The primary difference between the sectors is that the color of your torpedoes changes.

Every hit you score on a Theon or its torpedoes will add power units while every torpedo you fire depletes your power supply. The amount of power that is restored and depleted is also determined by the velocity of your star ship.

When you've finally run out of power units the game ends, with your score appearing at the bottom of the screen. The high score appears at the top of the screen. You may replay or exit the game at this point. I think you'll choose to replay.

Theon Raiders creates an excellent three-dimensional effect utilizing photon torpedoes, approaching enemy torpedoes and a background of stars. The game play is flawless. Written in assembly language, all input, whether through the joystick or keyboard, bears instantaneous results. Sound effects are realistic and well done. There are sounds for the firing of torpedoes, explosions and a whirring-type sound when you rotate the position of the star ship.

Ease of Use: Aside from following the loading instructions, and learning how to control your velocity and direction, this game is easy to use, though difficult to win. Even at the easiest difficulty level, at high speeds, everything happens very quickly. The challenge is not in figuring out how the game works but in figuring out how to defeat the Theons, which is as it should be.

Documentation: Theon Raiders comes with a 10-page pamphlet that includes loading instructions for all versions. It provides an adequate description of how to play the game.

Value: Because this game is written in assembly language it is directly comparable to any other space game available for the TI. Although I am not familiar with all such games, I know of none that is better designed or executed. And, it is priced right at $24.95. Seeing games of this quality developed by third-party programmers is indeed encouraging.

—JK

POLE POSITION—

(Continued from Page 18)

signs, result in a loss of valuable time.

Sound effects are equivalent to the engine sounds in TI's Car Wars. You hear the engine accelerate and decelerate. The squealing of tires is also realistic. The graphics are well done, with virtually no bleeding of colors. The scenery is realistic, though as a driver you do not have time to watch it as you hurdle down the road at speeds of up to 195 miles per hour.

Players may change the level of play or number of laps after each race. The "P" key is used as a pause key.

My principal criticism of this game has to do with what happens when you finish a race. Basically, nothing happens. You get your points and that is it. Completing an eight-lap race would seem to deserve more than that. You don't even know what place you took, though the assumption appears to be that if you finish the race, you won it. I would like to have seen a better scoring system. Also, you must run a time trial for every race. This gets to be very tiresome very quickly. Because all races occur on the same road, each race is much the same as the previous race. There is precious little variety.

Ease of Use: This is a very simple game to use, particularly with the joystick. You must read the directions before using the keyboard for input. Players may chose to use either the left side or right side of the keyboard for input, or both.

Documentation: The games with an adequate four-page manual.

Value: If you like arcade games or race games you will probably like Pole Position. I've seen it priced at $24.95 and do not recommend that anyone pay more than $30 for it. When this game first came out, it was heralded as one of the best games of the year. The original copyright belongs to Namco and is dated 1982. Personally, I do not see what all the excitement was about. All that I know is that I feel that I reached my level of competence very quickly and I don't think I will ever finish an eight-lap race, even at the novice level. Frankly, I don't care whether I do. (The 13-year-old is shaking his head over my comments. He likes it a lot.)

—JK

ASSEMBLY—

(Continued from Page 16)

language programming, and all your programs will fail unless completely documented. Instead, it gives a simple warning of that fact in the beginning and in the summary. The book assumes you have a measure of common sense, which is nice for a change.

Documentation: As stated above, the programs presented in the book are extensively documented. Nothing goes unexplained; every line, no matter how trivial, is reviewed. The book is written in a friendly style and is a pleasure to read. It almost takes the pain out of learning a very difficult subject.

Value: A book such as this has obvious value to the would-be assembly language programmer. Even the programs themselves that are presented in the book are worth the price of the book. The various routines given are invaluable. Most of the subjects are covered in depth, the section on keyboard input especially so. The only disappointment I had in this book was that little or no information was given about the various screen modes available to the assembly programmer. Nothing was said on how the programmer is to go about getting into text mode, which allows 40-column displays of text, or, more urgently, bitmap mode, which allows fantastic graphic displays using the very pixels themselves. Perhaps another book by Ralph Molesworth would go more in depth on the well-explained subjects already covered.

Over all, it is a fine book, and is extremely useful in gaining an understanding of assembly language. I would recommend this one over all the other assembly language books to the novice programmer or hobbiest.

Newsbytes

Spelling Checker

A spelling checker designed to operate out of the TI-Writer cartridge will be marketed starting July 4, according to its designers. The program is expected to sell for $49.95.

Nebraskan Tom Kirk is the author of the program. According to Gerald Turner, who is helping out on the project, Kirk started the program last year. Turner says it is designed to operate out of the TI-Writer Utility option. It comes on two disks, he notes, and includes a 20,000-word dictionary. Users may add their own dictionaries to the system. There is no limit, theoretically, to the number of words that can be added to the program, he says. Also, the program can be used with the Editor/Assembler cartridge.

According to Turner, after loading the program using TI-Writer's Utility option, the spelling checker requests the text file to be loaded. It then checks the text for exceptions to the words in the dictionary. The same routine is followed for user dictionaries. After the text has been checked against the words in the dictionaries, the program displays the words that were not recognized. The user then has the option of changing the spelling of the words or leaving them stand. Turner says the program is done and all that remains to be done is the printing of the spelling checker manual.

For more information, write to Kirk at 2606 Ponderosa Dr., Omaha, NE 68123.

Expanded compiler

SST Software Inc. of Cedarburg, Wisconsin, released its Expanded BASIC Compiler on June 5. According to SST, the Expanded BASIC Compiler contains of the features of the SST BASIC Compiler as well as most of the features of TI's Extended BASIC cartridge and other commands available in either TI BASIC or Extended BASIC. The program includes commands for bit-map mode for high resolution graphics and integer arithmetic for speed.

Users may also add their own commands to the Expanded BASIC Compiler, using the Editor/Assembler cartridge, the company says. The Expanded BASIC Compiler requires the expansion memory, a disk drive and controller and either the Editor/Assembler or Mini-Memory cartridge. It sells for $95. Those who purchased the BASIC Compiler before June 5 may purchased the Expanded BASIC Compiler for $50, the company says.

As a demonstration of the speed of the compiler, the company ran a benchmark program published in the April edition of MICROpendium that counts the number of ways change can be made for a dollar. The compiled version of the program took only 37 seconds to calculate the 292 change variations. One reader reported that the benchmark program ran in just under 30 minutes in TI BASIC and Extended BASIC.

For more information, write the company at P.O. Box 26, Cedarburg, WI 53012, or call (414) 771-8415.

Program book

Remoguides & Catalogs has come out with a 141-page book that includes 50 program listings (25 games, 16 educational, 9 personal). Thirty-two of the programs are written for console BASIC. Included are programming hints and an explanation of flowcharting. The book includes program contributions by 10 programmers. It was assembled by Remo A. Loreto. The price is $14.99. For more information, write: Remoguides & Catalogs, P.O. Box 14781, Cincinnati, OH 45214.

Amnion helpline

Helpline, formerly known as the International 99/4 Users Group Library Services, is operating independently of IUG. The Helpline is a service of Amnion Stoneware, which also markets products for the TI home computer market. However, all Helpline services are free of charge to any caller or writer.

Helpline provides information on hardware and software products as well as providing help to those with programming problems. Helpline maintains files on third party manufacturers. Guy Romano, Ph.D., is the resident authority and provides his services on a voluntary basis.

Users may contact Helpline by calling (415) 753-5581 from 9 a.m. to 3 p.m. (Pacific time) Monday through Saturday, or write them at 116 Carl St., San Francisco, CA 94117, enclosing a self-addressed, stamped envelope for a reply.

TInstrumentalist

Unisonic Resources, 922 Sherman St., Toledo, OH 43608, is marketing a quartet of instrumental music programs on cassette for the TI. According to the company, the programs are designed to use the computer as a tool to help develop the skills necessary to play a variety of instruments. Programs written in BASIC are available for violin and trumpet. Programs requiring Extended BASIC are available for flute and clarinet. The programs emphasize correct intonation by playing scales in unison with the computer, the company says. The programs also display fingerings, note names and position on a staff. A metronome feature is also included. The programs are $15 each, including postage and handling.

Taxes in Texas

The Texas Legislature is expected to enact a state sales tax on software sales this summer. Software has been exempt from the state sales tax. The exemption came about after a court ruled that software is not a tangible item and thus should not be taxed. Though software was made available via tangible media such as cassettes and diskettes, the argument was made that taxing the medium would be like taxing a shoebox but not the shoes inside.

A sales tax is charged for software purchases in most, if not all, other states.

Newsbytes is a column of general information for TI99/4A users. It includes product announcements and other items of interest. The publisher does not necessarily endorse products listed in this column. Vendors and others are encouraged to submit items for consideration. Items submitted will be verified by the staff before inclusion and edited to fit the Newsbytes format. Mail items to: MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

User Notes

Most accurate?

The Houston (Texas) Users Group suggests TI users type the following brief program into their computers as a means of determining the relative accuracy of the TI versus other well-known microcomputers.

```
100 N=1.0000001
110 FOR C=1 TO 27
120 M=N^2
130 N=M
140 NEXT C
150 PRINT "ANSWER=";N
160 PRINT ((674530.470741-N)/N)*100;"
% ERROR"
170 END
```

The Houstonians note that the program came from the April edition of Scientific American. The program squares the number 1.0000001 27 times. They note that some pocket calculators gave the results with 0.001% to 0.02% error. The Apple II, it is reported, had a 96.63% error and the IBM-PC gave an answer that was 1212.06% in error.

How accurate is the TI? You'll have to enter the program to find out.

Free cassette

The Los Angeles 99ers Computer Group says that TI users who bought their consoles before Oct. 31, 1983 may still be eligible to receive a "Teach Yourself BASIC" cassette from Texas Instruments. At the time, TI offered purchasers of its home computer a choice of either attending a free programming class or the tutorial cassette. Of course, the classes were discontinued. However, the LA 99ers say you can still recieve the cassette by calling the TI toll-free hotline at 1-800-TI-CARES to obtain the cassette.

Extra long

The 9900 Users Group Inc. of Moorestown, New Jersey, offers a suggestion that may be of benefit to those who write lengthy pieces of text in PRINT statements in Extended BASIC. What it allows you to do is to eliminate the discontinuous appearance of the text when the program is run. It may also have applications in program lines.

First, begin typing in the PRINT line. As you reach the end of the line length limit, enter the end quote, type in a double colon statement separator (::), hit ENTER and start another PRINT line on the next program line. When you run it you'll notice there is no break between the first PRINT entry and the second. You'll need to experiment to determine just where the statement separator should be placed. When it is done properly, the end of the first line is followed directly by the beginning of the second.

Get it straight

The following program comes via the Manasota 99/4A Users Group in Sarasota, Florida. The Floridians suggest using it to check for image distortion on your television or monitor.

```
100  CALL CLEAR
110  CALL CHAR(32,"FF818181818181FF")
120  PRINT ::::::::::::
130  CALL HCHAR(10,1,88,5)
140  CALL HCHAR(10,28,88,5)
150  GOTO 150
```

The program displays 32 vertical lines and 24 horizontal lines, with the top 12 lines going across the screen. Five "X"s will appear on the left and right sides of line 10. Columns 1 and 32 will be missing from the bottom 12 rows. The program runs in BASIC. If you run it in Extended BASIC, it will lock up the computer and you will have to turn it off to unlock it.

132 characters

If your printer is attached to the computer via the parallel port, it's likely that when you access it you will use the simple "PIO" command to do it. That works quite well, of course, but what if you want to do more than just print out lines according to the 80-column printer default?

According to the Johnson Space Center TI Users Group in Houston, Texas, you can print up to 132 characters of compressed type on a single line simply by defining the length in the printer output statement. Here's an example:

```
100  OPEN #1: "PIO",VARIABLE 132
```

Assuming you have set your printer for compressed typed, you will be able to print up to 132 characters on a line, depending on how carriage returns are used.

Tuneful keyboard

Ilya Feygin of Jackson Heights, New York, submitted the following BASIC piano keyboard program. You won't learn how to play a piano with it, but it is easy to use and doesn't take much time to enter.

```
100  CALL CLEAR
110  DIM A(150),K(1000)
120  FOR T=1 TO 150
130  A(T)=T+110
140  NEXT T
150  READ A(65),A(83),A(68),A(70),
A(71),A(72),A(74),A(75),A(87),A(69),
A(82),A(84),A(89),A(85),A(73)
160  DATA 262,294,330,349,392,440,494,
523,277,311,370,415,466,554,523
170  READ A(49),A(50),A(51),A(52),
A(53),A(54),A(55),A(56),A(79),A(76),
A(80),A(59),A(13)
180  DATA -1,-2,-3,-4,-5,-6,-7,-8,
554,587,622,659,698
190  Input "DURATION  ":D
200  BB=1
210  CALL KEY(3,K(BB),S)
220  IF S=0 THEN 210
230  IF K(BB)=32 THEN 270
240  CALL SOUND(D,A(K(BB)),2)
250  BB=BB+1
260  GOTO 210
270  FOR I=1 TO BB-1
280  CALL SOUND(D,A(K(I)),2)
290  K(BB)=0
300  NEXT I
310  GOTO 190
```

Feygin, aged 12, says the program produces a scale of notes and half notes, as well as eight noises. The first row of keys generates the noise, the second row the half notes, the third

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User Notes

(Continued from Page 21)

row the notes and the fourth row will produce a variety of low tones. They notes are played as you press the keys. The program will also replay every note by simply pressing the space bar.

Loading up

Here are some CALL LOADs that you may find useful. Use of them requires an Extended BASIC cartridge and expansion memory. They may also work using the Editor/Assembler or Mini-Memory cartridges.

CALL LOAD (-31806,64): Disables sprites.
CALL LOAD (—31806,32): Disables auto sound processing.
CALL LOAD (—31806,128): Disables FCTN QUIT, sound and sprites.
CALL LOAD (—31806,0): Restores any or all of the above functions.
CALL LOAD (—31748,1): Represents normal cursor speed and normal duration for warning tones and input beeps. Loading with CALL LOAD (—31748,12), for example, causes the cursor to blink faster and increases the duration of the tones. Using zero halts the cursor and disables the tones.

Word processing

Del Gittinger, president of the Marion Area 99ers in Marion, Ohio, recently faced the problem of producing the group's newsletter without access to a bona fide word-processing program. Rather than just wait for a program to show up, he devised the following program that he calls his Quick and Dirty Word Processor.

```
100  CALL CLEAR
110  DIM TEXT$(24)
120  CALL SCREEN(12)
130  CALL VCHAR(1,2,62,24)
140  CALL VCHAR(1,31,62,24)
150  FOR X=1 TO 24
160  ACCEPT AT(X,1) BEEP SIZE
(28): TEXT$(X)
170  NEXT X
180  OPEN #1:"RS232.BA+9600"
190  PRINT #1:CHR$(15)
200  FOR X+1 TO 24
210  PRINT #1:TEXT$(X)
220  NEXT X
230  CLOSE #1
240  GOTO 100
```

Be mindful that the program is set up to dump to the printer after entering 24 lines of text. Each line is entered individually, allowing the user to manually right-justify it if he likes. Of course, once a line is entered, it is not possible to go back to correct or change it. These parameters can be changed by the user. Also, for those with a parallel printer, change line 180 to OPEN #1:"PIO".

This program can be modified so that the text is saved to disk or cassette for printing.

Accuracy counts

John Contario of Milford, Ohio, writes: "When I originally read the 'We dare you' note (February issue) to try running a TI against a Commodore 64, I assumed that the advantage was (our 16-bit) speed. After getting stomped by almost a factor of 3 by my friend's 64 in the run time category, I asked specifically what his output looked like and only then found that the TI advantage was accuracy not speed. Since he did not actually understand the program, he didn't realize that it ran—but not correctly.

"Enclosed is a summary of what I could assemble from friends and co-workers as to how other computers did with this program."

COMPUTER	TIME (sec)
IBM PC	02.5
HP 85B	03.4
PDP 11	04.0
Kaypro 10	05.5
Waters 721 Controller	05.6
HP 75	08.7
Apple IIe	11.2
TI99/4A (XB)	13.8
Atari 800	23.0
Atari 1200	23.0
TI99/4A (BASIC)	27.7
HP 41CV Pocket Calculator	38.9

Models With Incorrect Output

Model	Time	No. Missed
Commodore 64	10.4	9, 25, 36, 100
TRS80 Model I (XB)	12.0	25, 49, 81, 100
Timex Sinclair 1000	24.0	9, 25, 36, 100

This is the test program that was used:

```
100  For N=1 TO 100
110  IF SQR(N) < > INT(SQR(N))
THEN 130
120  PRINT N
130  NEXT N
140  END
```

User Notes is a column of tips and ideas designed to help readers put their home computers to better use.

The information provided here comes from many sources, including TI home computer user group newsletters. MICROpendium will pay $10 for any item sent in by readers that appears in this column. Mail tips to: MICROpendium, P.O. Box 1343, Round Rock, TX78680.

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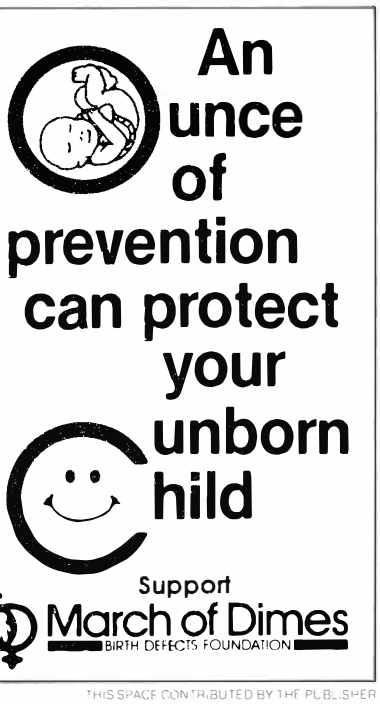

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